

REMARKS

Claims 1, 3, 5, 7-9 and 12-15 are now pending in the application. Claims 1, 3 and 8 have been amended and claims 12-15 have been added as new. Support for the foregoing amendments can be found throughout the specification, drawings, and claims as originally filed. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

INTERVIEW SUMMARY

Applicant would like to thank the Examiner for the courtesies extended to Applicant's representative during a telephonic interview on August 14, 2009. During that interview, the Examiner and Applicant's representative discussed features disclosed in the present disclosure, the proposed claims, and the cited art. While no agreement was reached, the Examiner acknowledged certain distinguishing features of the present disclosure and further requested Applicant clarify the claims.

REJECTION UNDER 35 U.S.C. § 101

Claims 1 and 3 stand rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter.

Applicant has amended claim 1 to address this rejection. Applicant respectfully submits that claim 1 requires connecting the working bus and the protection bus of a node in various ways. Therefore, reconsideration and withdrawal of this objection are respectfully requested.

REJECTION UNDER 35 U.S.C. § 112

Claims 1, 3, 5 and 7-9 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point and distinctly claim the subject matter which Applicant regards as the invention. This rejection is respectfully traversed.

Applicant has amended claims 1 and 8 to address this rejection. A VC3 or a VC4 refers to a virtual container used to carry services, which presents a unit of resources of an optical port. The minimum protection unit in claim 1 can be regard as a unit of the resource of an optical port. That is, it is the resources of an optical that are divided into multiple minimum protection units. Applicant respectfully submits that the amended claim 1 is clear. Therefore, reconsideration and withdrawal of this objection are respectfully requested.

REJECTION UNDER 35 U.S.C. § 102

Claims 1, 3, 5, 8 and 9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Taniguchi (U.S. Pat. No. 6,122,250). This rejection is respectfully traversed.

Applicant has amended claims 1 and 8 to address this rejection. Therefore, reconsideration and withdrawal of this objection are respectfully requested.

The amended claim 1 now recites a virtual protection method for a fiber path in a network having more than one node, which comprises:

- dividing resources of each optical port [[of]]by each of the nodes in the fiber path into multiple minimum protection units;
- defining a plurality of logic-systems in the network, each of the logic systems including a physical media and carrying services, the physical media including nodes and fiber connecting those nodes;

mapping more than one of the minimum protection units by each of the node into different ones of the plurality of logic-systems, each of the plurality of logic-systems including two minimum protection units of at least one of the nodes; wherein a first logic-system of the plurality of logic-systems respectively adopts a first protection mode of multiplex section protection, path protection or sub-network connection protection; a second logic-system of the plurality of logic-systems adopts a second protection mode of multiplex section protection, path protection or sub-network connection protection; and

determining, where protection for the services carried by a logic-system which adopts a protection mode of multiplex section protection is needed, a working mode by each of the nodes, belonging to the first logic-system; the working mode including normal working mode, passing working mode, bridging working mode and switching working mode;

in the passing working mode, connecting an input protection bus of a given node to an output protection bus of that node;

in the bridging working mode, connecting the input protection bus of that node to the output working bus of that node; and

in the switching working mode, conducting the input working bus of that node to the output protection bus of that node;

in the normal working mode, connecting the input working bus of that node to an output working bus of that node;

wherein protection for the services carried by a given logic-system which adopts a path protection is needed, performing a path protection by each of the nodes belonging to that given logic-system;

wherein protection for the services carried by a given logic-system which adopts a sub-network connection protection is needed, performing a sub-network connection protection by each of the nodes belonging to that given logic-system.

Claim 1 requires that resources of each optical port of each node device in the network are firstly divided into multiple minimum protection units; and secondly, the multiple minimum protection units are mapped into different ones of a plurality of logic-systems. In other words, claim 1 requires dividing the network into a plurality of logic-systems. Among those logic-systems, a first logic-system adopts a first protection mode of multiplex section protection, path protection or sub-network connection protection; a second logic-system adopts a second protection mode of multiplex section

protection, path protection or sub-network connection protection. When protection for the services carried by a logic-system which adopts a protection mode of multiplex section protection is need, each of the nodes belonging to the logic-system performs a multiplex section protection. When protection for the services carried by a logic-system which adopts a protection mode of path protection is need, each of the nodes belonging to the logic-system performs a path protection. When protection for the services carried by a logic-system which adopts a protection mode of sub-network connection protection is need, each of the nodes belonging to the logic-system performs a sub-network connection protection. That is, claim 1 requires different logic-systems adopt different protection modes, such as multiplex section protection, path protection, sub-network connection protection, and even 1+1 protection, 1:N protection. Each logic-system can perform an automatic protection switch independently and individually without affecting the services transmitted via other logic-systems.

In contrast, Taniguchi at best teaches a ring transmission system of a bi-directional line switched ring type comprising nodes (A) to (F) connected by ring transmission lines RL. Fig. 32 of Taniguchi shows an explanatory view of the automatic protection switch protocol. Fig. 32 and the related texts of Taniguchi appears to show when node (A) detects an alarm, it transmits a request indicating the transmission line failure in both directions to node (B). The other nodes in the ring, such as node (C) and (D), enter into a “full path through” state and allow K1 and K2 bytes and protection line channels to pass there through. Thus, the request indicating the transmission line failure is indicated by the K1 and K2 bytes in the SOH of the frame. An explanatory view of the header and the K1 and K2 bytes is shown in Fig. 33. One skilled in the art

would appreciate that the protection mode adopted by the ring illustrated in Fig. 32 of Taniguchi is multiplex section protection since the K1 and K2 bytes in the SOH of the frame are used to indicate a transmission line failure. The one or more STM-0 transmitted via the nodes of the ring have a same protection mode.

In contrast, claim 1 requires a first logic-system of the network adopts a first protection mode, while a second logic-system of the very same network adopts a second protection mode. That is, different logic-systems adopt different protection modes.

Thus, Taniguchi fails to anticipate the features of “mapping more than one of the minimum protection units by each of the node into different ones of the plurality of logic-systems”, wherein “a first logic-system of the plurality of logic-systems respectively adopts a first protection mode of multiplex section protection, path protection or sub-network connection protection; a second logic-system of the plurality of logic-systems adopts a second protection mode of multiplex section protection, path protection or sub-network connection protection” and the features of “where protection for the services carried by a logic-system which adopts a path protection is needed, performing a path protection by each of the node belonging to the logic-system; where protection for the services carried by a logic-system which adopts a sub-network connection protection is needed, performing a sub-network connection protection by each of the node belonging to the logic-system” in claim 1.

In view of the above discussion, it is respectfully submitted that claim 1 cannot be anticipate by Taniguchi. Therefore, the rejection should be withdrawn.

For similar reasons, claim 8, which recites a device corresponding to the method set forth in claim 1 and including similar limitations as those of claim 1, is not anticipate by Taniguchi.

With respect to claims 3, 5 and 9, without addressing the assertion in the Office action, which are not conceded, Applicant submits that they dependent directly or indirectly from claims 1 and 8 and therefore patentably distinguish from Taniguchi.

REJECTION UNDER 35 U.S.C. § 103

Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Taniguchi (U.S. Pat. No. 6,122,250) in view of Russell et al. (U.S. Pat. No. 6,917,630). This rejection is respectfully traversed.

Claim 7 depends from claim 1. As discussed above, Taniguchi is silent about the feature “mapping more than one of the minimum protection units by each of the node devices into different ones of the plurality of logic-systems”, wherein “a first logic-system of the plurality of logic-systems respectively adopts a first protection mode of multiplex section protection, path protection or sub-network connection protection; a second logic-system of the plurality of logic-systems adopts a second protection mode of multiplex section protection, path protection or sub-network connection protection” and the feature “where protection for the services carried by a logic-system which adopts a path protection is needed, performing a path protection by each of the node devices belonging to the logic-system; where protection for the services carried by a logic-system which adopts a sub-network connection protection is needed, performing a sub-

network connection protection by each of the nodes belonging to the logic-system” in claim 1.

Further, Russell at best appears to show a method of transmitting OSI layer 2 datacoms data by direct incorporation into a plurality of synchronous digital hierarchy virtual containers is disclosed, in which a higher bit rate OSI layer 2 data frames is multiplexed into a plurality of lower bit rate SDH (or SONET) virtual containers, which are transmitted simultaneously and in parallel over a synchronous communication network. But Russell is also silent about the features of “mapping more than one of the minimum protection units by each of the node devices into different ones of the plurality of logic-systems”, wherein “a first logic-system of the plurality of logic-systems respectively adopts a first protection mode of multiplex section protection, path protection or sub-network connection protection; a second logic-system of the plurality of logic-systems adopts a second protection mode of multiplex section protection, path protection or sub-network connection protection” and the feature “where protection for the services carried by a logic-system which adopts a path protection is needed, performing a path protection by each of the nodes belonging to the logic-system; where protection for the services carried by a logic-system which adopts a sub-network connection protection is needed, performing a sub-network connection protection by each of the node devices belonging to the logic-system” in claim 1.

In view of the foregoing, Applicant submits that Taniguchi and Russell, taken alone or together, fail to teach or suggest the above features of claim 1 and that claim 7 cannot be obvious over Taniguchi and Russell. Therefore, the rejection should be withdrawn.

NEW CLAIMS

Applicant has added claims 12-15 to provide varied scope of protection. Applicant believes that claims 12-15 are patentable over the cited art.

For example, claims 12 and 14 require selectively switching, at a node, virtual containers mapped to different logic-systems in accordance with different working modes.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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